**Physics Revision: Radioactivity**

Mastery Matrix Points

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| Describe what radioactive decay is |
| Recall the definition and units for activity and count rate |
| Describe what makes up alpha, beta, gamma and neutron radiation |
| Describe the properties of each type of radiation |
| Use nuclear equations to represent radioactive decay |
| Define half-life |
| Complete half-life calculations from graphs or other data |
| Use ratios to describe radioactive decay (higher/triple) |
| Describe the impact and precautions for radioactive contamination |
| Analyse data about the effects of radiation on people |

Key Knowledge

Definitions:

Radioactivity

Activity

Count rate

Half life

Irradiation

Contamination

What are these made of?

Alpha –

Beta –

Gamma –

Neutron -

Symbols

Alpha –

Beta –

Gamma -

Properties

Alpha –

Beta –

Gamma -

What equipment is used to measure radioactive decay?

Understanding and Explaining

1. **Explain why some atoms are radioactive.**
2. **Compare and contrast the properties of alpha, beta and gamma radiation, include penetration through materials, their**

**range in air and ionising power.**

1. **Describe how to show these types of decay using nuclear equations. Give an example for each. i) alpha decay ii) beta decay**
2. **Explain how to calculate half-life from a graph of radioactive activity vs time.**
3. **Explain how to calculate how much of a radioactive material would be left if you are given the time, half-life and initial activity.**
4. **What proportion of a radioactive substance would be left after i) one half life has passed ii) two half-lives have passed iii) three half-lives have passed?**
5. **Describe some risks and suggest some precautions that should be followed if using radioactive materials.**
6. **Explain why it is important that findings of studies into the effects of radiation on humans should be published.**